

What is claimed is:

1 1. In a cam torque actuated phaser disposed between a first moving shaft and a second
2 moving shaft, the phaser having a first end connected to the first moving shaft, and
3 a second end connected to the second moving shaft; a housing connected to the
4 first end and a rotor connected to the second end, the rotor forming at least one
5 vane disposed within the housing and dividing the housing into an advance
6 chamber and a retard chamber, the vane being limited by at least one physical stop
7 caused by an inside surface of the housing; the phaser being coupled to at least one
8 check valve; the phaser being further controlled by a feed back control loop having
9 a control law, wherein an integrator accumulates a plurality of error signals
10 resulting from the difference between a set point control signal and a feedback
11 signal; the phaser further including a spool valve having a predetermined null
12 position; a method involving the phaser comprising:

13 moving the spool valve just off the predetermined null position;

14 permitting control fluid to flow at a substantially slow rate; and

15 causing the vane to be positioned at a substantial distance away from the
16 physical stops, thereby reducing noise caused by the vane coming in
17 contact with the housing.

1 2. The method of claim 1 further comprising the step of opening the loop.

1 3. The method of claim 1, wherein the spool valve is center mounted within the phaser.

1 4. The method of claim 1, wherein the step of moving the spool valve just off the
2 predetermined null position includes moving the spool valve toward a retard
3 direction or an advance direction.

1 5. The method of claim 1, wherein the predetermined null position is determined by a
2 controller.

1 6. The method of claim 1, wherein the engine controller is an ECU.